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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,766	09/28/2004	Soodesh Buljore	CR00556P	2151

22917 7590 11/27/2006

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EXAMINER	
NGUYEN, LEON VIET Q	

ART UNIT	PAPER NUMBER
2635	

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/509,766	BULJORE ET AL.	
	Examiner	Art Unit	
	Leon-Viet Q. Nguyen	2635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

VU LE
SUPERVISORY PATENT EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 9/28/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 9/28/2004 was filed after the mailing date on 9/28/2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: One of the co-inventors failed to sign the oath.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1-2 and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Hottinen et al (WO 01/69814 A1).

Re claim 1, Hottinen discloses a method of closed-loop multi-stream wireless

communication between transmitter means (abstract) comprising a transmit antenna array of N transmit antenna elements (pg. 8 lines 8-10) and receiver means comprising a receive antenna array of M receive antenna elements (pg. 1 lines 5-9), wherein a plurality of distinct data streams (pg. 8 lines 13-14) are transmitted from said transmit antenna array to said receive antenna array (pg. 8 lines 14-16, fig. 3, the output of SA1 and SA2 to 20) and said data streams are weighted by respective complex weighting matrices (pg. 14 lines 4-12, pg. 18 line 30 – pg 19 line 9, component 12) before being applied to said transmit antenna array (fig. 3), said distinct data streams being separated and estimated at said receiver means (pg. 15 lines 25-32), the method comprising:

applying said distinct data streams to respective sub-groups of said transmit antenna elements (pg. 8 lines 14-16) at least one of which comprises a plurality of said transmit antenna elements (pg. 13 lines 25-28), each of said sub-groups comprising at least N_d transmit antenna elements (pg. 13 lines 25-28), where M is greater than or equal to N/N_d (for Hottinen's invention M = 1, N = 1, and N_d = 2), said complex weighting matrices being functions of the respective transmission channels of said data streams including the respective sub-groups of transmit antenna elements (pg. 19 lines 1-9).

Re claim 2, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 1.

Re claim 4, Hottinen discloses a method wherein the number of said transmit antenna elements in each of said sub-groups is re-configurable during operation (pg. 12 lines 10-17).

Re claims 5-6, the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 1. It would be inherent to have a transmitter and receiver to perform the method of claim 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Hottinen et al (WO 01/69814 A1) as applied to claim 1 above, and further in view of Raleigh (US 6377631).

Re claim 3, Hottinen fails to teach the limitations as claimed. However Raleigh teaches a method wherein weighting matrices are calculated to be substantially equal to the eigenvector corresponding to the largest eigenvalue of the matrix $H^{H}H$ (col. 19 lines 57-59), where H is the matrix of the equivalent channel including the respective sub-groups of transmit antenna elements seen by the corresponding data stream (col. 15 lines 4-6) and H.sup.H is the Hermitian transform of the matrix H (it is well known in the

art that a matrix with ^{H} is the notation for a hermitian matrix, i.e. A^{H} is the hermitian conjugate of A). .

Therefore taking the combined teachings of Raleigh and Hottinen as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of calculating weight vectors into the transmit diversity system of Hottinen to choose optimal weights which are used to maximize the SNR of received signals (col. 19 lines 66-67).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon-Viet Q. Nguyen whose telephone number is 571-270-1185. The examiner can normally be reached on monday-friday, alternate friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on 571-272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Nguyen/

VU LE
SUPERVISORY PATENT EXAMINER